

### REMARKS

Reconsideration of the application is requested in view of the modifications above and the remarks below. Claims 1-26 are pending. Claims 12-4 have been withdrawn from consideration. New Claims 16-26 have been added to set for the invention in a varying scope and are supported in the specification. No new matter has been added.

#### 1. Rejections Under 35 USC 112

The Office Action rejected Claims 5, 6, 7 and 8 under 35 USC 112, second paragraph as indefinite.

The Office Action alleged that the term "high excess sulfuric acid" in Claim 5 is a relative term and renders the claim indefinite. Claim 5 has been amended in light of the comments and the rejection is believed to be overcome. Reconsideration is requested.

The Office Action alleged that the term "high ferric iron level" in Claim 6 is a relative term and renders the claim indefinite. Claim 6 has been amended in light of the comments and the rejection is believed to be overcome. Reconsideration is requested.

The Office Action alleged that "determining an approximation of the amount of soluble molybdenum" in Claim 8 is indefinite as in what the soluble molybdenum is determined. The soluble molybdenum is determined in the leach slurry (Specification, para 17, lines 1-3). Reconsideration is requested.

The Office Action alleged that "the determining step" and "recycle solution" lack antecedent basis in the claims. In light of the comments, Claim 9 has been amended to include proper antecedent basis and "the determining step" has antecedent basis in Claim 7. The Office Action also alleged that "monitoring concentrate analysis, recycle solution analysis" in Claim 9 is indefinite as to what are the positive process steps of each analysis. Reconsideration is requested.

The Office Action also alleged that "accomplished by" in Claim 9 is indefinite as to the metes and bounds. Claim 9 has been amended in light of the comments. Further, the Office Action alleged that "pulp density" is indefinite. Support for "pulp density" is found in the Specification at page 6, paragraph 21, lines 4-6. One skilled in the art would understand, from the Specification, "pulp density" and be able to practice Applicants' invention. Reconsideration is requested.

#### 2. Rejection Under 35 USC 103

The Office Action rejected Claims 1-11 under 35 USC 103 as unpatentable

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over US Pat No. 5,804,151 (Sweetser et al) or US Pat No. 3,656,888 (Barry et al). The rejection should be withdrawn in view of the modifications above and the remarks below.

It is well established that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970). The Office Action did not establish a *prima facie* case of obviousness.

Claim 1 relates to a method of optimizing the oxidation of molybdenite concentrates includes: a. forming an aqueous slurry of said molybdenite concentrates; b. heating said slurry to a temperature of at least about 200°C; c. agitating said slurry while in contact with an atmosphere containing free oxygen; d. oxidizing said slurry in said atmosphere at an oxygen over pressure of at least about 50 p.s.i.; e. regulating an amount of ferric iron concentration and excess sulfuric acid concentration during the oxidation reaction; and thereby f. producing a leach slurry wherein greater than about 99% of the molybdenum in said molybdenite concentrate is oxidized.

Applicants' invention is based on the discovery that the concentration of soluble molybdenum is significantly affected by final excess acid and iron concentrations (Specification, paragraph 31, lines 1-5). This effect on molybdenum solubility is caused, in part, by the beginning of iron and/or molybdenum precipitation, followed by a rapid increase in the excess acid level that causes more molybdenum to precipitate (Specification, paragraph 37, lines 1-3). Indeed, the test data in Table 1 and in Figures 1a-c, 2a-c and 3 of the Specification show this effect.

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The advantage of this effect in Applicants' invention is an ability to control the chemical reactions and predict the amount of soluble molybdenum in an autoclave discharge. Further, Applicants' invention allows the free acid in the autoclave to be controlled at a relatively high level, therefore producing lower soluble silicone levels. Applicants' invention also provides an improved recycled leach slurry with a content of free acid and ferric iron that increases the initial rate of reaction such that a shorter retention time is required for leach (Specification, para 41, lines 5-7).

The Office Action admits that neither Sweetser et al nor Barry et al teach or suggest "regulating the ferric and sulfuric acid concentration" Office Action, page 4, lines 1-2). The Office Action further alleges that "[e]ach of the taught processes oxidizes an aqueous slurry of molybdenite at the instantly claimed temperature and oxygen pressure so that the instantly claimed 'regulating' recitation would appear to be inherently included in the taught process. This is because each of the taught processes forms sulfuric acid and molybdenite contains iron which would form ferric ion during the oxidation process would self regulated the ferric iron and the sulfuric acid content during the oxidation reaction." (Office Action, page 4, lines 3-8).

The Office Action's rejection is based on prima facie obviousness under 35 USC 103 and alleges that Sweetser et al or Barry et al disclose inherent features of Applicants' invention. Inherency is a rejection ordinarily brought under 35 USC 102, not 35 USC 103. Nevertheless, this rejection is not supported by the facts. It is well settled U.S. law that if an invention is anticipated under inherency, the invention must flow as a necessary conclusion from the prior art, not just a possible one. The fact that the prior art *may* possibly have the same features as the claimed invention will not substantiate a finding of inherency (*In re Oerlich*, 212 USPQ 323, 326 (CCCPA 1981)). Further, in relying upon the theory of inherency, the examiner must provide, a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art. (*Ex parte Levy*, 17 USPQ2d 1461, 1465 (Bd. Pat. Appl. & Inter 1990)).

Regarding inherency, the Office Action, Sweetser et al or Barry et al do not have the facts necessary to support that Sweetser et al or Barry et al inherently disclose features of Applicants' invention. The Office Action's allegation that each of

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Sweetser et al and Berry et al taught processes oxidizes an aqueous slurry of molybdenite at the instantly claimed temperature and oxygen pressure so that the instantly claimed 'regulating' recitation would appear to be inherently included in the taught process because each of the taught processes forms sulfuric acid and molybdenite contains iron which would form ferric ion during the oxidation process would self regulated the ferric iron and the sulfuric acid content during the oxidation reaction (Office Action, page 4, lines 3-8) is not supported. Autoclave temperature and oxygen pressure merely control the mineral oxidation kinetics and not regulated the ferric iron and the sulfuric acid content during the oxidation reaction. Accordingly, the Office Action, does not provide a basis on fact or technical reasoning to reasonably support that the allegedly inherent regulating necessarily flows from either Sweetser et al or Barry et al, alone or in combination.

Further, with respect to Sweetser et al and Barry et al, a prima facie case of obviousness cannot be supported by Sweetser et al or Barry et al, alone or in combination. Sweetser's et al leaching conditionings are 175 to 225°C, 3 to 20 atmospheres of pressure, and only 0.5 to 2.0% of the molybdenum reports to the liquor phase (Col. 12, line 25). Thus, Sweetser's et al autoclaving process would not have made one of ordinary skill in the art following the teachings of Sweetser et al to modify Sweetser et al, practice Applicants' invention, and expect results of the significant effect of excess sulfuric acid and iron concentration on the molybdenum solubility that Applicants have shown.

In fact, Sweetser et al teaches away from Applicants invention of optimizing the oxidation of molybdenite concentrates by disclosing a method for producing  $\text{MoO}_3$  from  $\text{MoS}_2$  in which the oxidation and conversion of  $\text{MoO}_3$  is terminated before complete conversion  $\text{MoS}_2$  to  $\text{MoO}_3$ . (Abstract, lines 5-9). Sweetser et al. is only directed to oxidizing only 70 to 95% of the molybdenite and have a minimum of the molybdenum go to the process liquor (Abstract, lines 10-12). Thus, Sweetser et al does not teach or suggest that "greater than about 99% of the molybdenum in the molybdenite concentration is oxidized" of Applicants' Claim 1, and therefore there is no overlap in a portion of the range as suggested by the Office Action.

Also, Sweetser et al discloses that the termination may be based on monitoring the S content or the  $\text{H}_2\text{SO}_4$  concentration. Whereas, Applicants'

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invention includes regulating the "excess sulfuric acid" that is the remaining acid after correcting a tritrated acid for the bisulfate and hydrogen ions associated with copper, iron and molybdenum (Specification, para 34, lines 1-5 and Table 3). Sweetser et al does not teach or suggest regulating the amount of ferric iron concentration and excess sulfuric acid concentration during the oxidation reaction, and thereby producing a leach slurry wherein greater than about 99% of the molybdenum in said molybdenite concentrate is oxidized, of Applicants' Claim 1. In other words, the teachings of Sweetser et al are insufficient to obviate Applicants' invention. Reconsideration is requested.

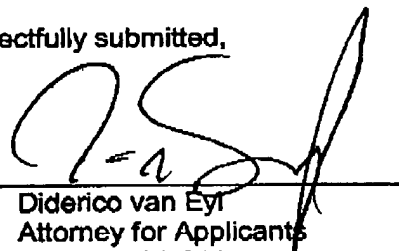
Regarding Barry et al., Barry et al does not teach or suggest Applicants' invention or there are no facts or technical reasoning in the Office Action to reasonably support the determination that the allegedly inherent regulating necessarily flows from the teaching of Barry et al. Even though as alleged in the Office Action, Barry et al. discloses sulfuric acid and molybdenite which contains iron, there is no teaching or suggestion to practice Applicants' invention, and expect the results Applicants' have obtained. Barry et al discloses oxidation of molybdenum under pressure and at an elevated temperature for a period of time to effect conversion of at least a portion of the molybdenum disulfide to molybdenum oxide. Barry et al teaches a process which provides improvement in reactions rates by increases in temperature and pressure (Col. 4, lines 31-49). Barry et al discloses oxidation of the molybdenum at merely amounts of 54 to 90 %. Therefore, Barry et al merely teaches changes in the reaction rates and does not teach or suggest regulating the amount of ferric iron concentration and excess sulfuric acid concentration during the oxidation reaction to produce a leach slurry wherein greater than about 99% of the molybdenum in the molybdenite concentrate is oxidized, of Applicants' invention of Claim 1. Reconsideration is requested.

Thus, there are neither any facts or technical reasoning in the Office Action nor any teachings of Sweetser et al or Barry et al, alone or in combination, to reasonably support the determination that applied art obviates Applicants' invention.

In view of the remarks above, a Notice of Allowance is earnestly requested.

Respectfully submitted,

By



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